



Colorado Wind & Distributed Energy Workshop

Step by Step Wind Plant Development

April, 2002

SeaWest WindPower Inc.



- ◆ **Founded in 1982**
- ◆ **Wind Energy Development is Core Business**
- ◆ **Largest independent developer of utility scale wind power**
- ◆ **Over 140 employees**
- ◆ **Operations in US, Europe, and Latin America**

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Fully Integrated Wind Energy Specialists

- ◆ Meteorology
- ◆ Environmental/Permitting
- ◆ Transmission/Interconnection
- ◆ Engineering/Design
- ◆ Financing
- ◆ Construction Management
- ◆ Operations & Maintenance
- ◆ Asset Management

SeaWest Consulting



- ◆ 12 years experience in providing professional consulting services
- ◆ Provide expertise to:
 - utilities
 - project finance firms
 - investors
 - wind turbine manufacturers
 - government
 - industry groups
 - development partners

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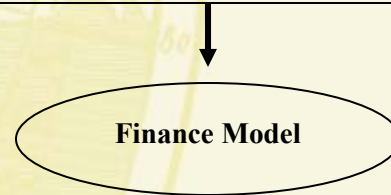
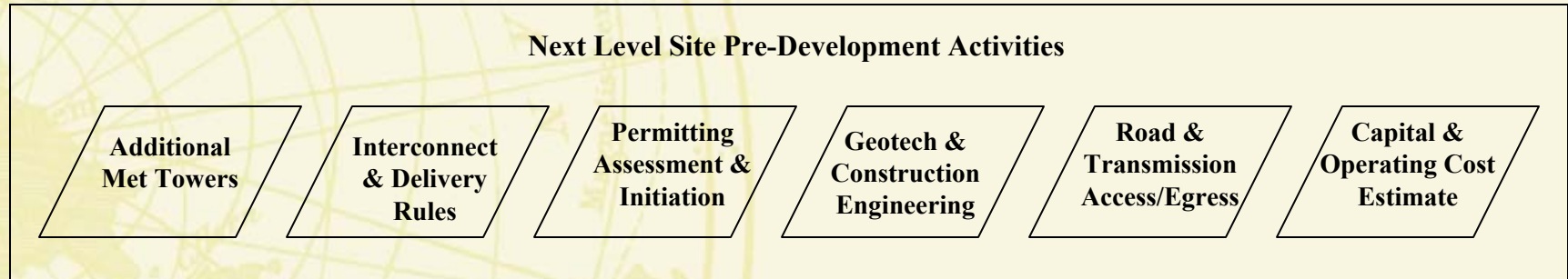
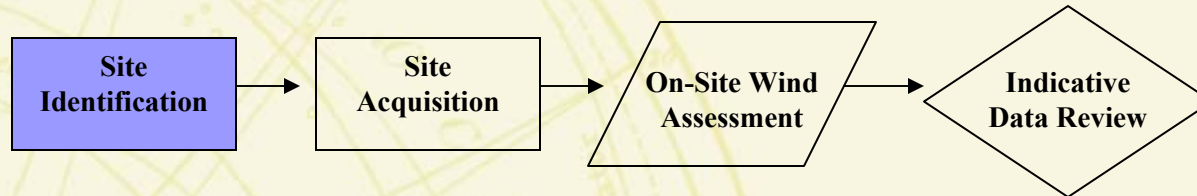
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What Does it Take to Build a Wind Plant?



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Wind Plant Development Process



Initial Site Feasibility Tests

Permitting

- ◆ Can your site be permitted?
- ◆ Which permitting agencies?

Transmission

- ◆ Lines located nearby?
- ◆ Whose lines?

Topography

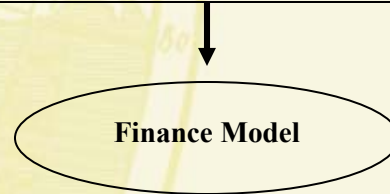
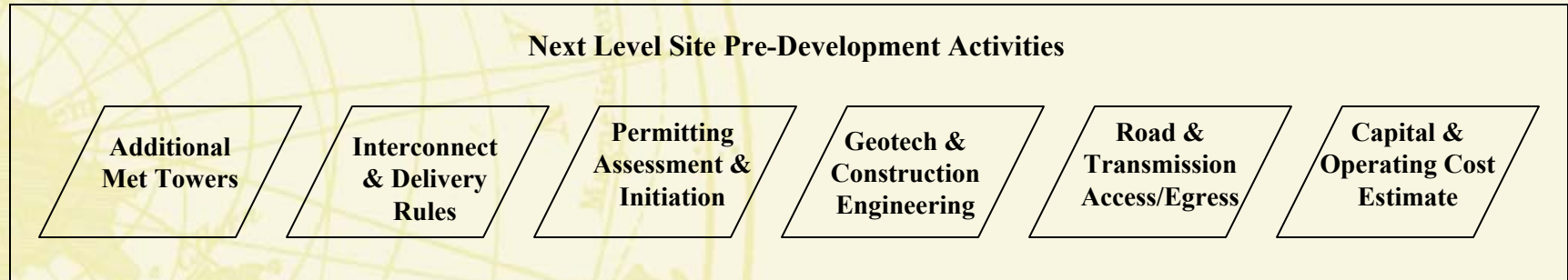
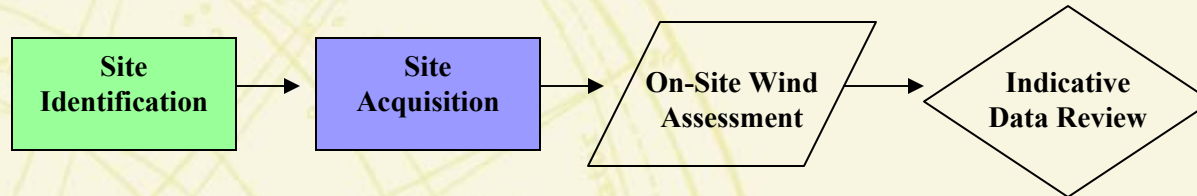
- ◆ Prone to wind?
- ◆ Build-able?
- ◆ Suitable?



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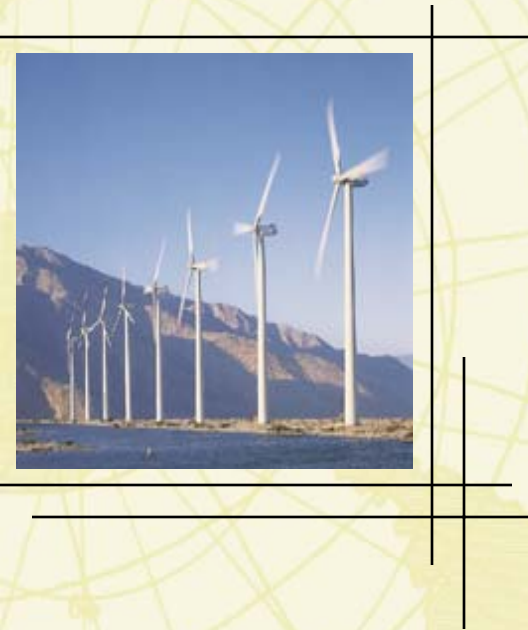
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Wind Plant Development Process



Site Acquisition

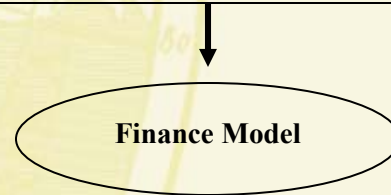
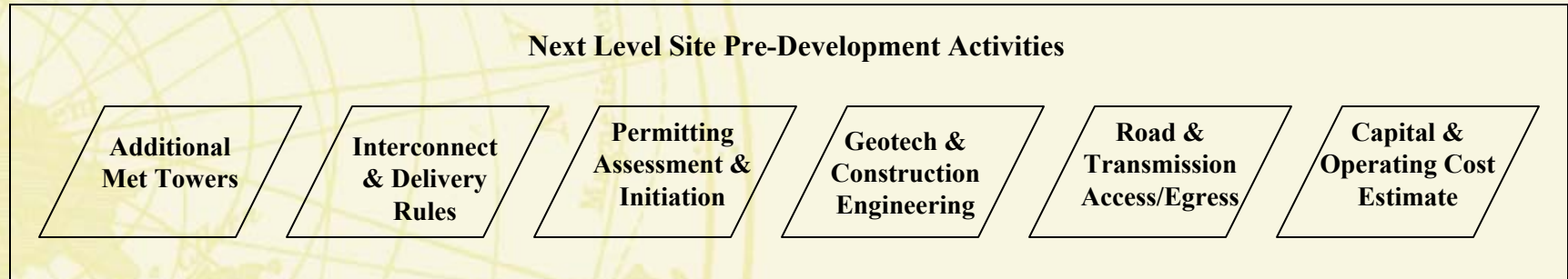
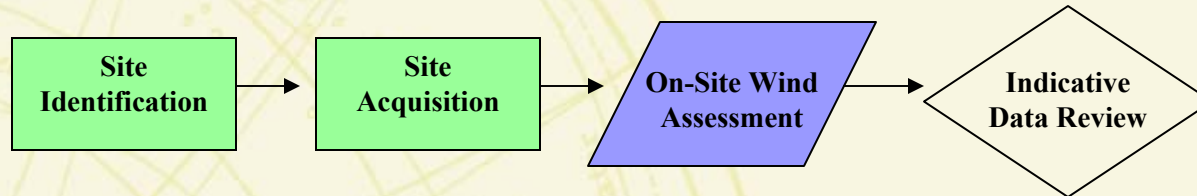
- ◆ Confirm Owner Has Clear Title!
- ◆ Wind Monitoring Agreement
 - ◆ Ability to erect MET tower(s)
 - ◆ Right to enter property
- ◆ Lease Option Agreement
 - ◆ Typically includes signing fee
 - ◆ 2-4 year term
- ◆ Land Lease Agreement
 - ◆ Sets out payment structure
 - ◆ Defines term (typically 20-35 years)
 - ◆ Clarifies rights and requirements of both landowner and lessor



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On-Site Wind Assessment

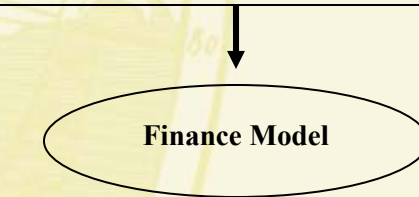
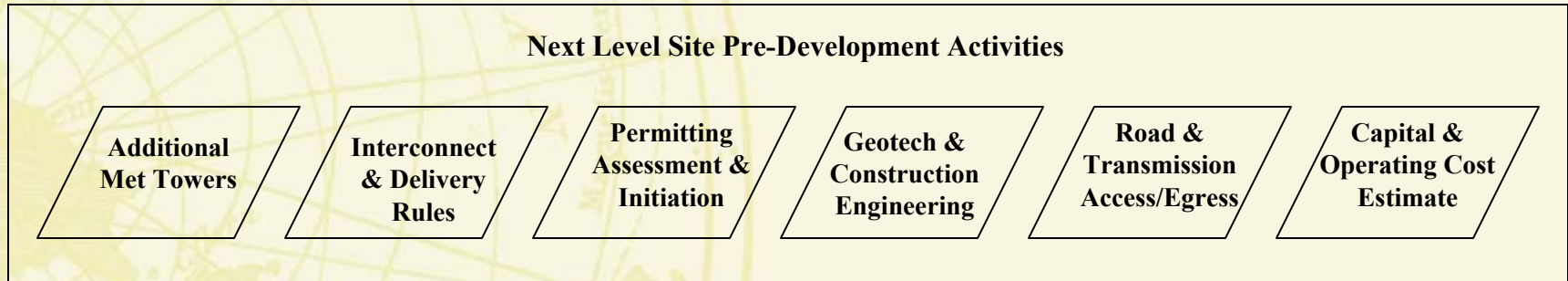
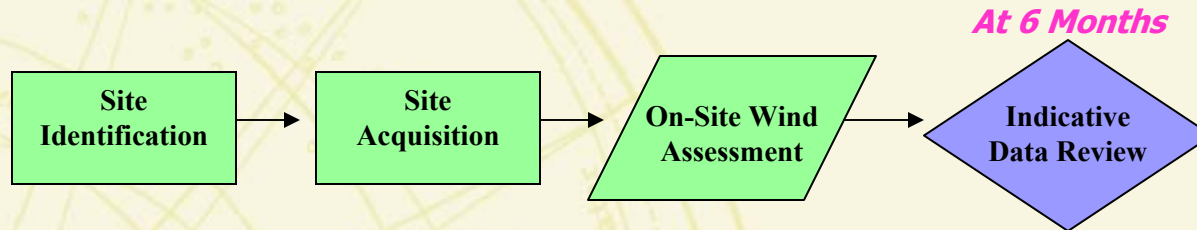


- ◆ **Install MET Tower(s)**
- ◆ **Correlate to Long-Term Data**
(if possible)
- ◆ **Otherwise Need Minimum of 12 Months**
- ◆ **Hire a Professional!**
 - ◆ To conduct measurements
 - ◆ To analyze data

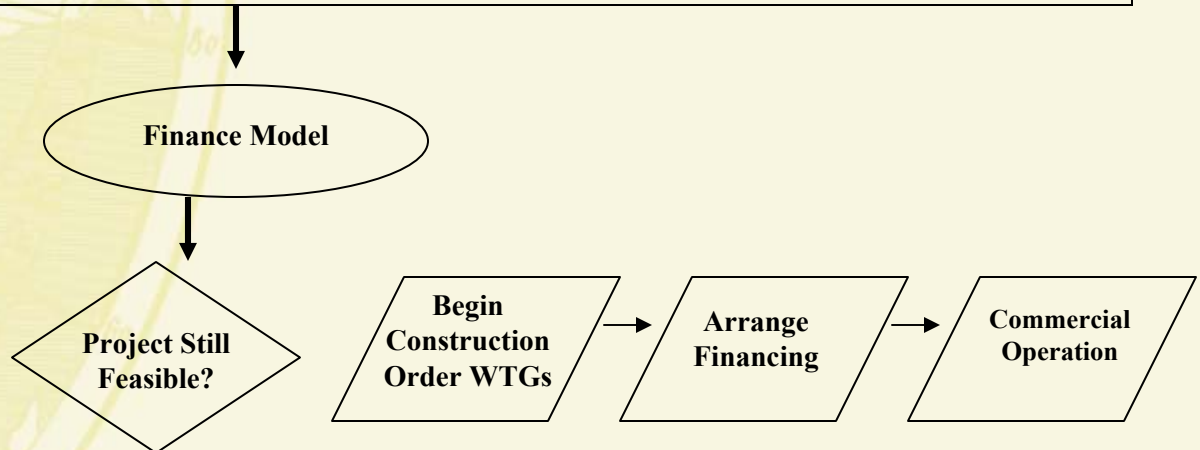
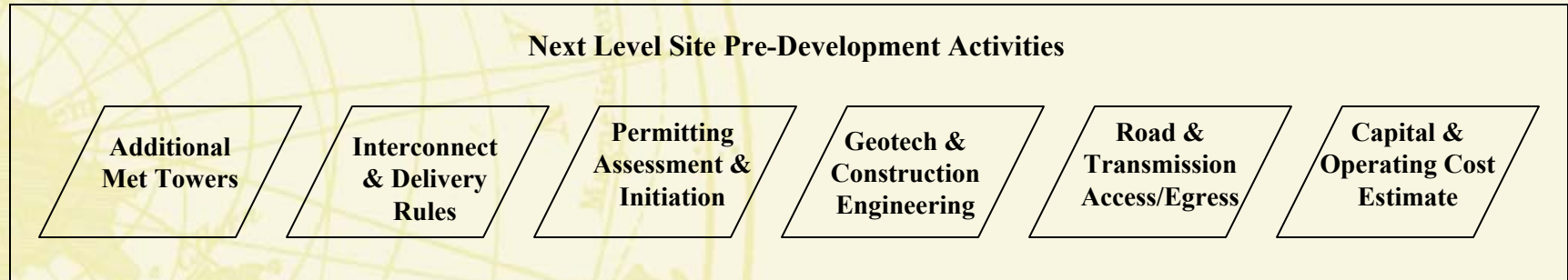
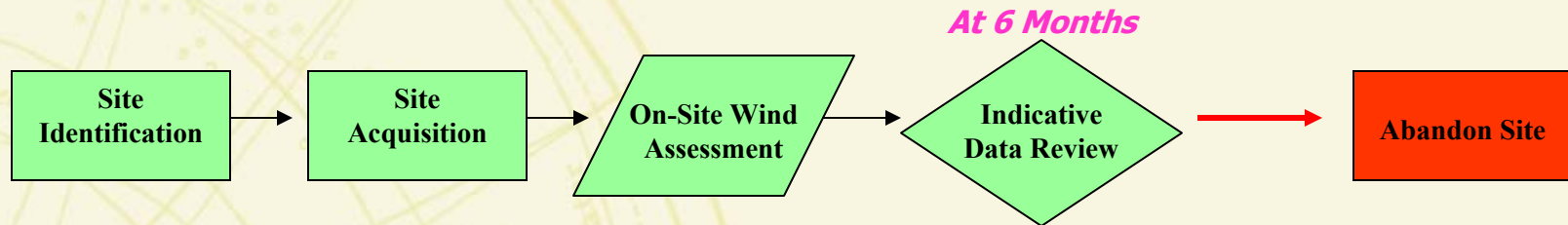


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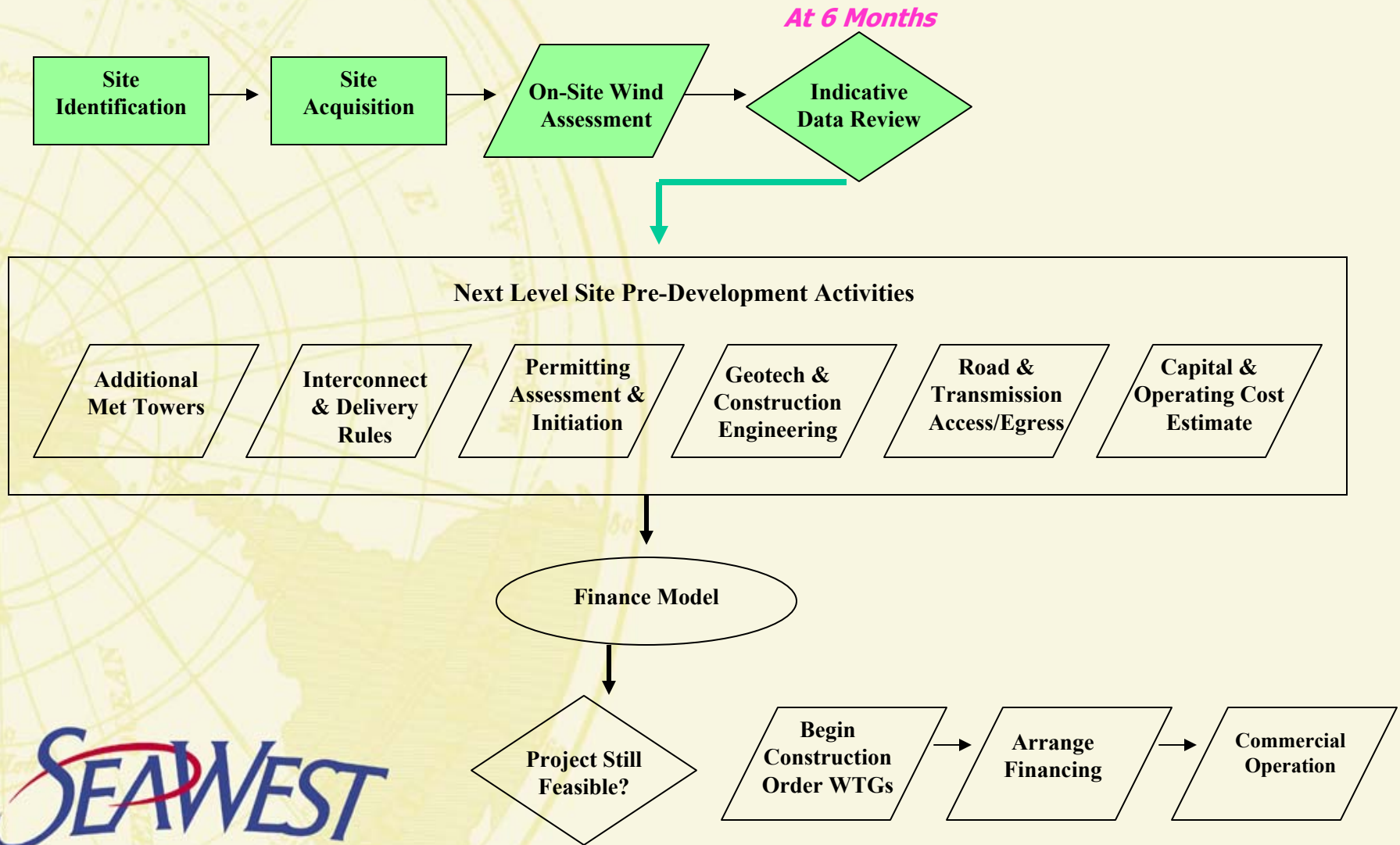
Wind Plant Development Process



Wind Plant Development Process



Wind Plant Development Process



Political Support and Incentives

Information & Education are Key!

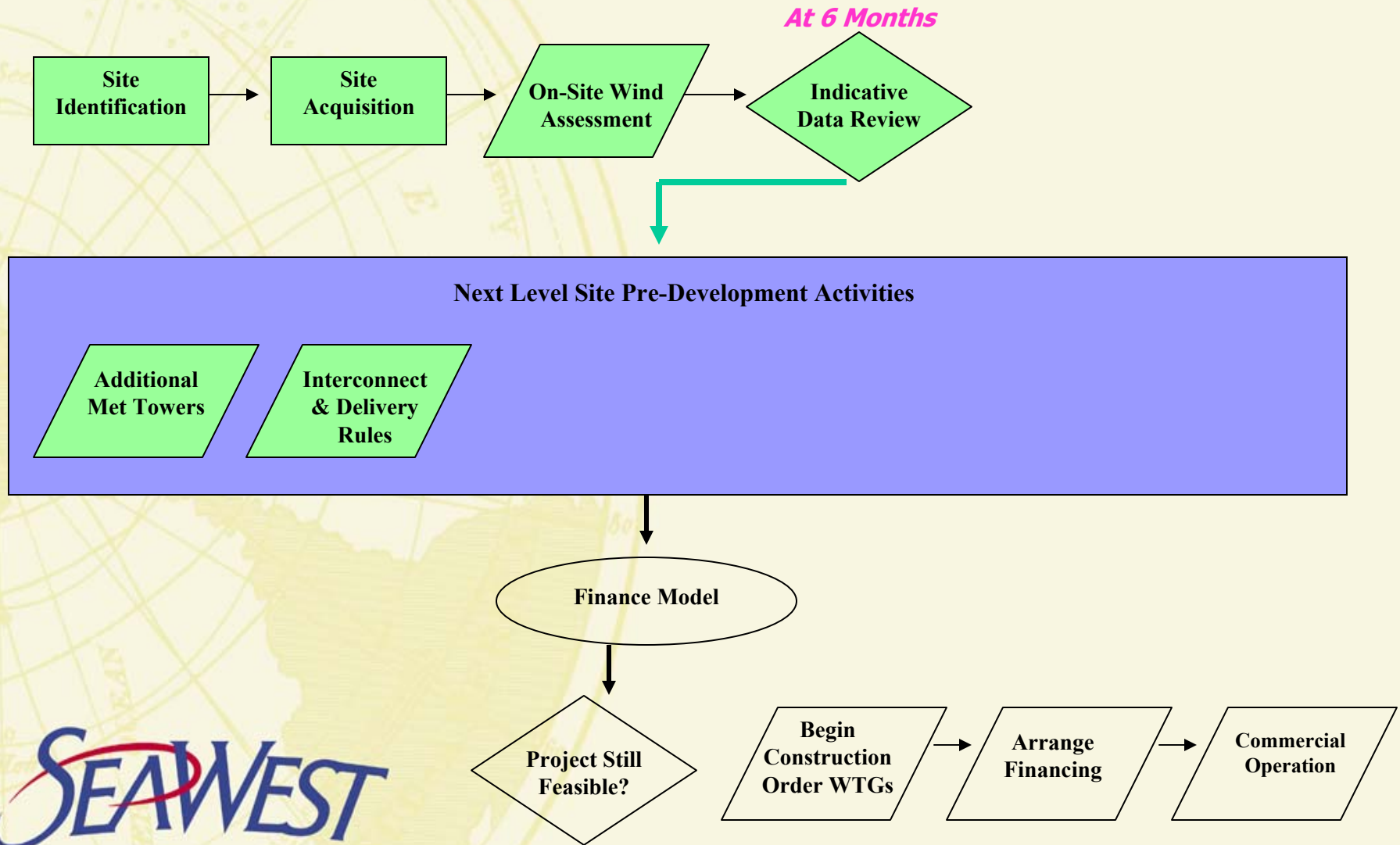
- ◆ Get Support of Local and State officials
- ◆ Must have buy-in from local citizens
- ◆ Acknowledge and mitigate opponents' concerns where possible
- ◆ Work for Economic Assistance
 - ◆ Property Tax Abatement
 - ◆ Enterprise Zones
 - ◆ Rural Economic Development Funds



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Wind Plant Development Process



Site Pre-Development

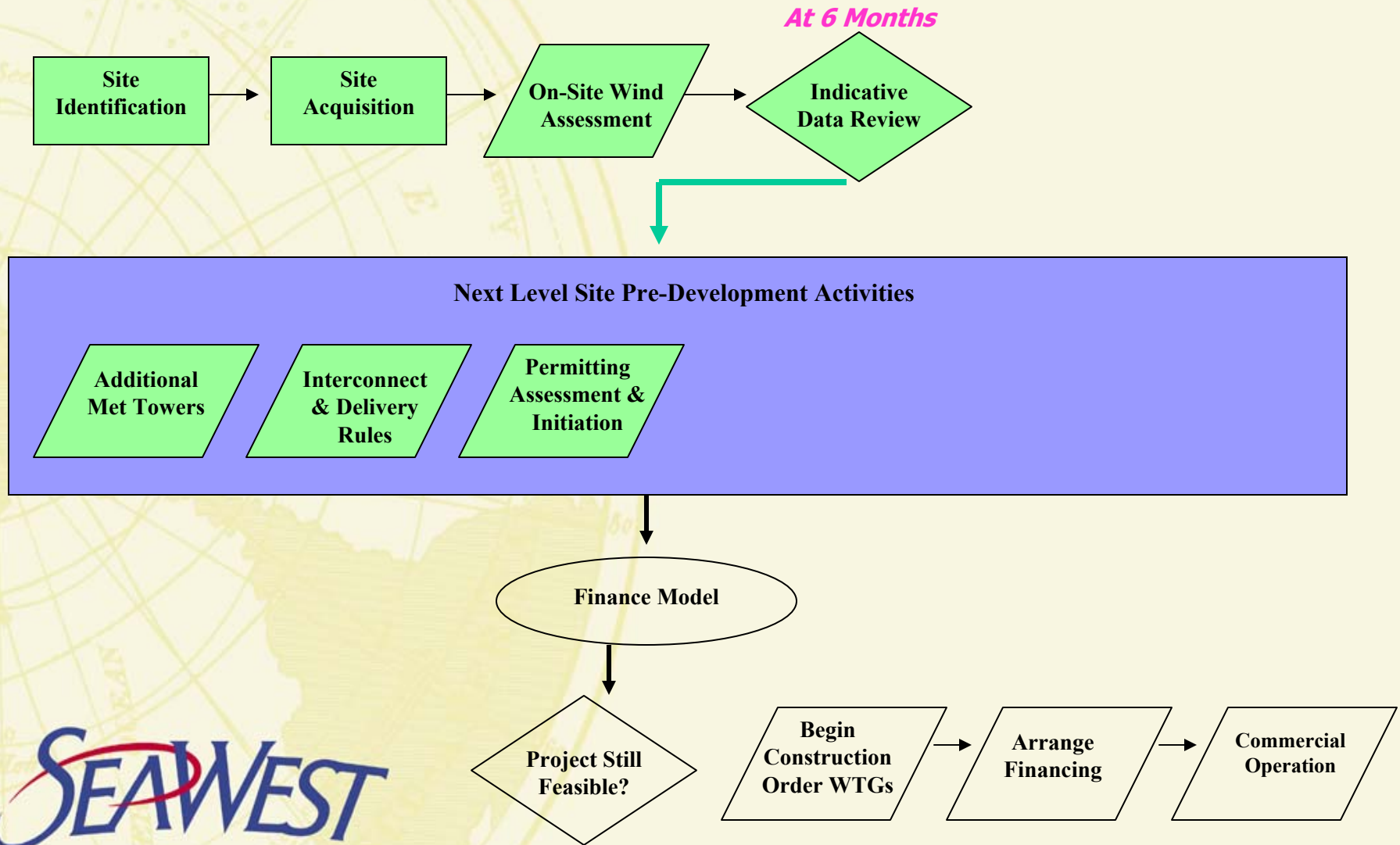
Transmission:

- ◆ Located within 8 miles
- ◆ Must have capacity available
- ◆ Must have minimal constraints to deliver power to demand center(s)



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Wind Plant Development Process



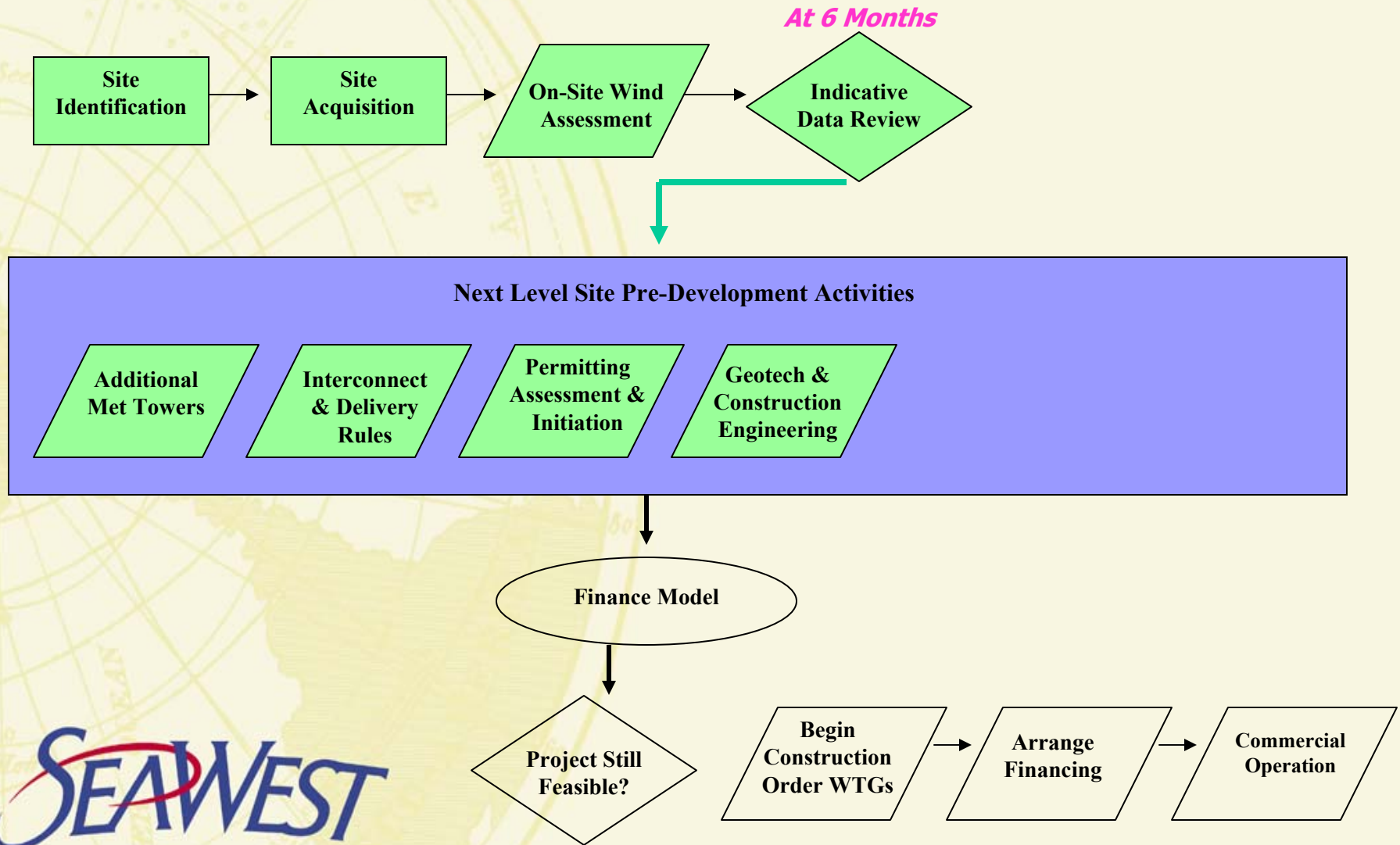
Site Pre-Development

Permitting:



- ◆ No endangered Species
- ◆ No migratory bird fly-ways
- ◆ No culturally significant landmarks/places
- ◆ Best if not near population center
- ◆ Allow for minimum 6 mos if EIS is not required under NEPA
- ◆ Min. 14 -18 mos. if EIS is required

Wind Plant Development Process



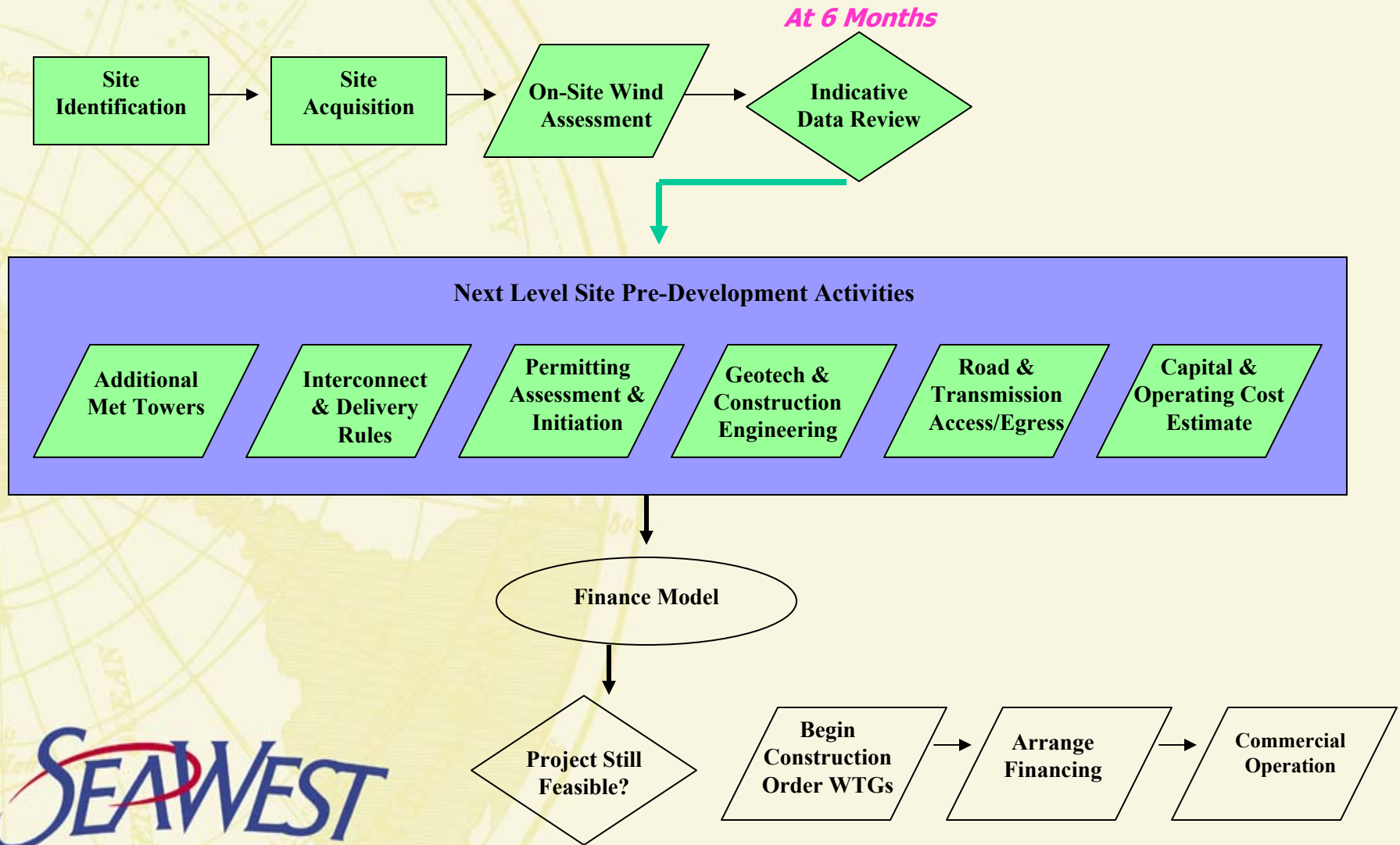
Site Pre-Development

Construction:

- ◆ Build-able landscape (not too steep or densely vegetated)
- ◆ Geotechnical Studies show positive results
 - ◆ Land can support weight of structures
 - ◆ No major fault lines
- ◆ Keep seasonal conditions in mind when scheduling

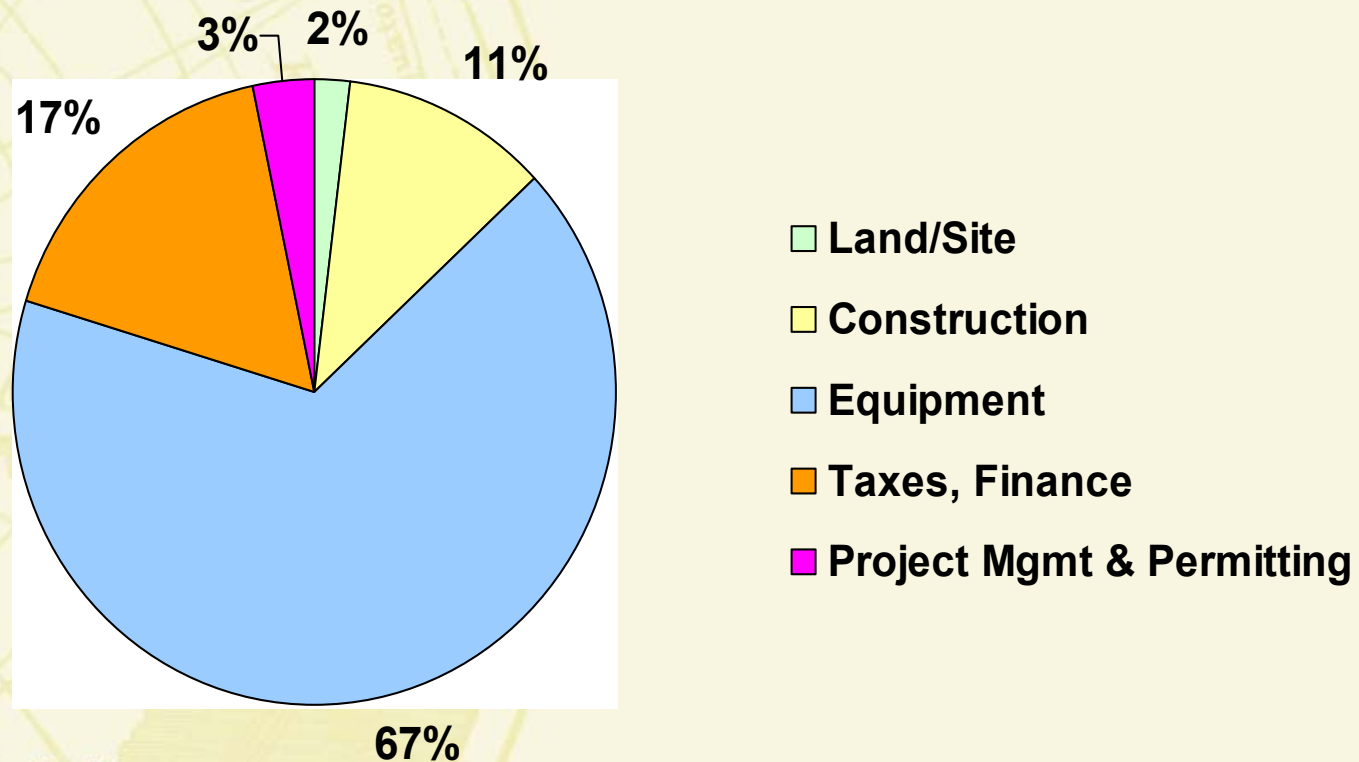


Wind Plant Development Process

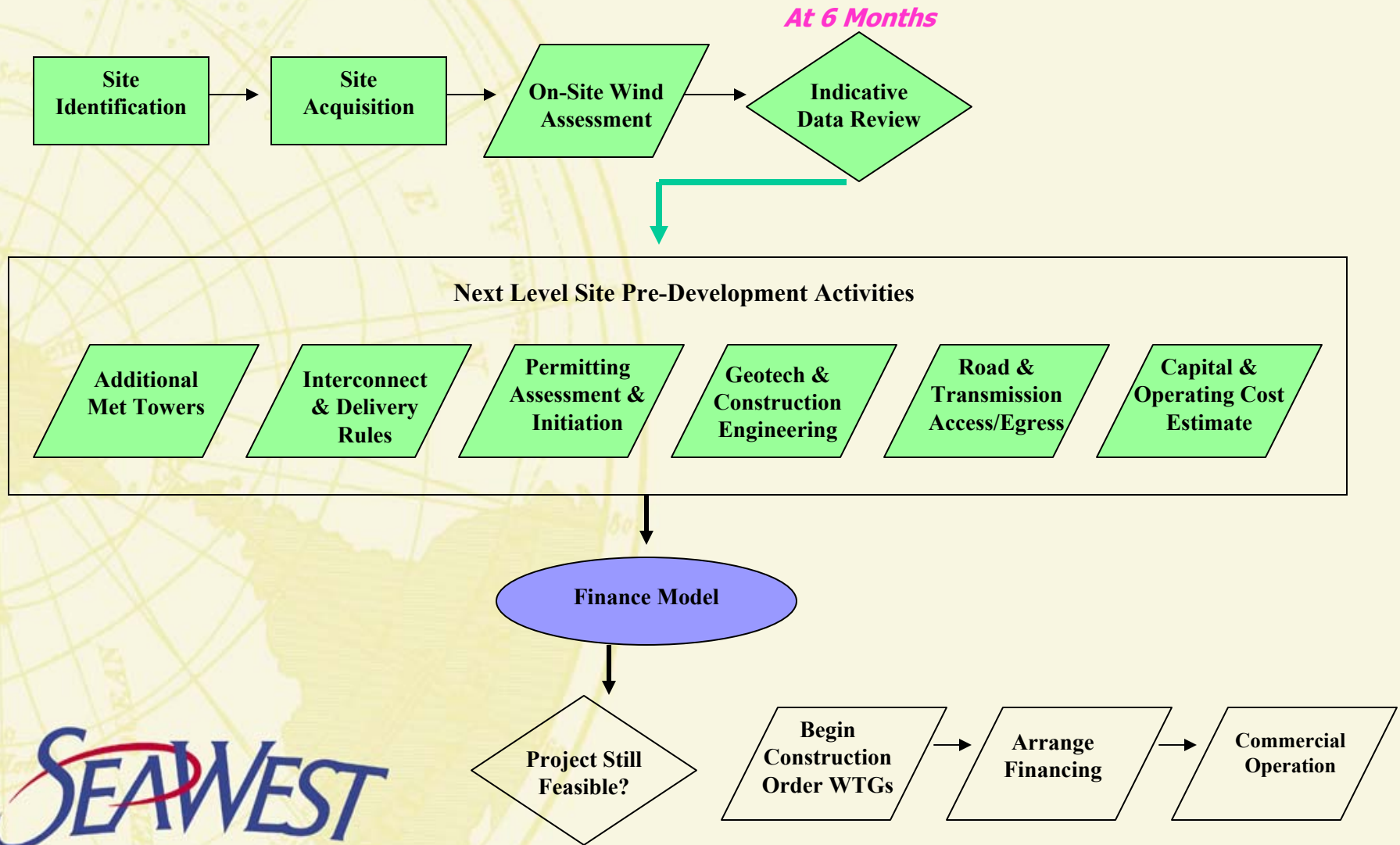


Economics of Windplant Development

Costs to Reach Substantial Completion



Wind Plant Development Process



Strong Economic Model

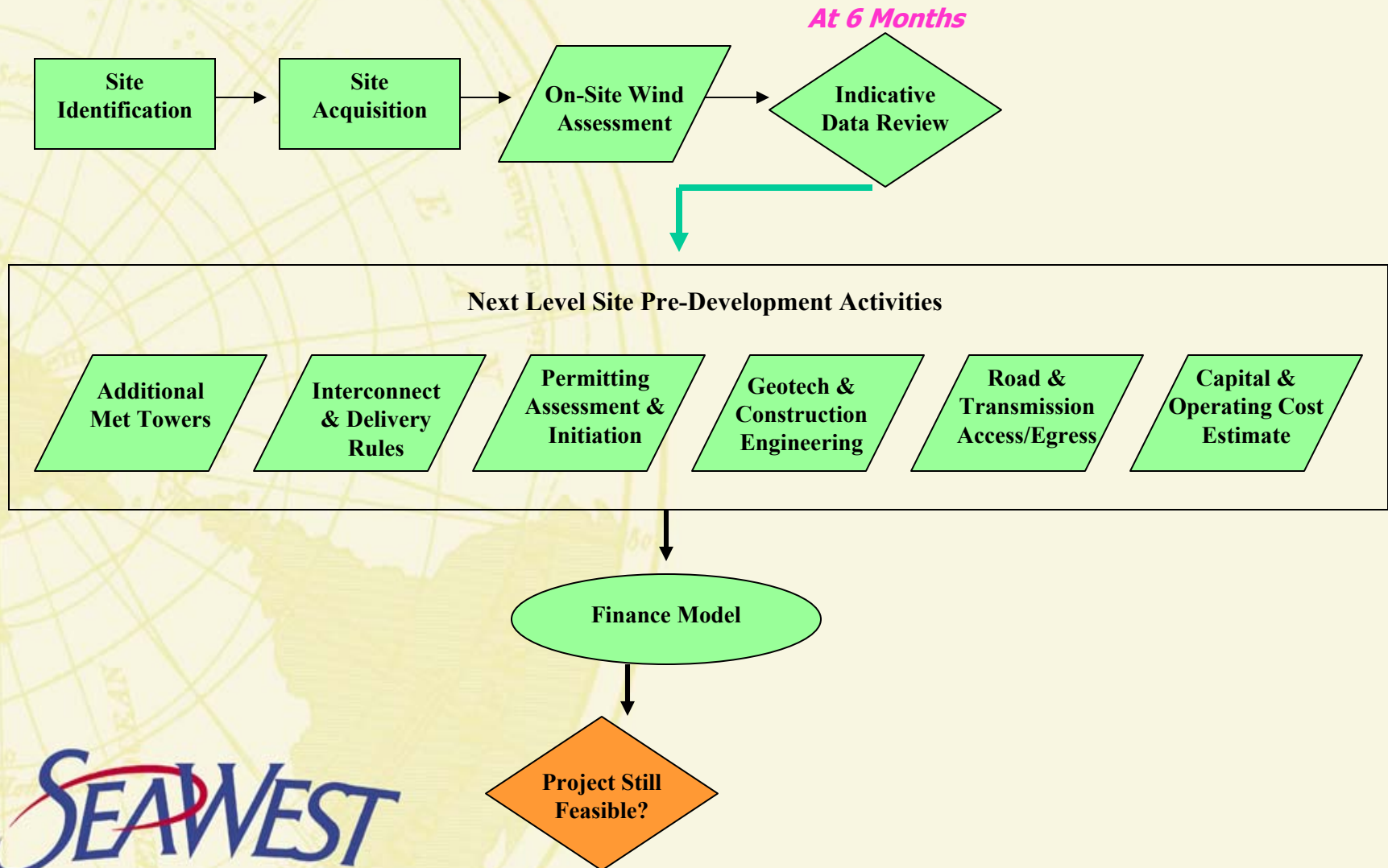


- ◆ Realistic Assumptions
 - ◆ Power price forecast
 - ◆ Wind resource and capacity factor
 - ◆ Costs: development, construction & operations
- ◆ Energy revenues and incentives (PTC or REPI) lead to acceptable ROI
- ◆ Reserves funded for:
 - ◆ Debt coverage
 - ◆ O&M
 - ◆ Unplanned Equipment Failure

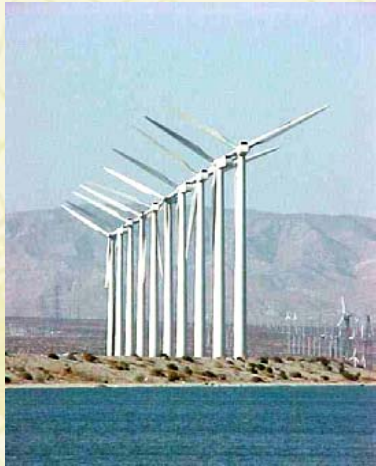
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Other Issues

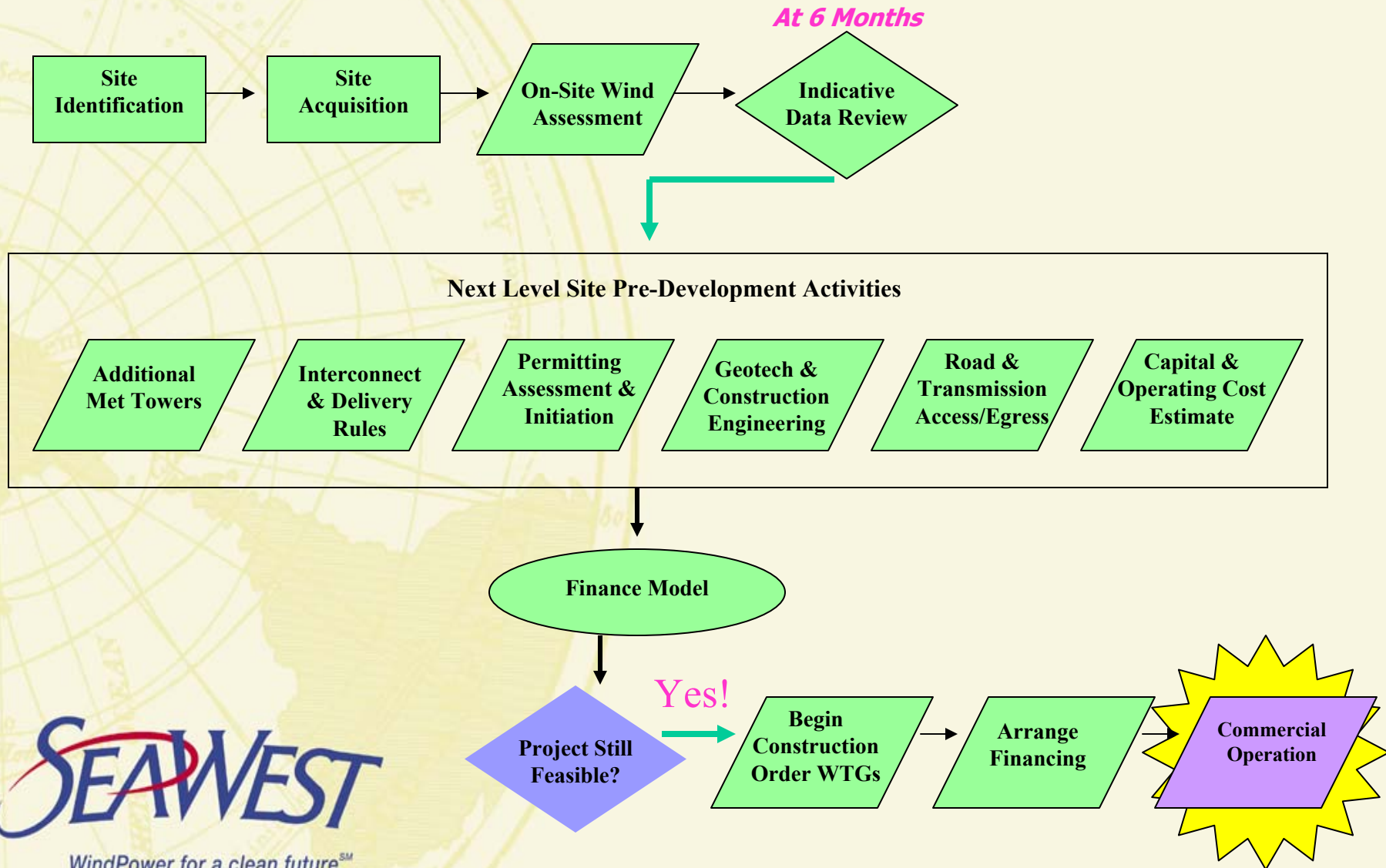


- ◆ Ability to finance either through debt or all equity
- ◆ Need power purchaser if not using the energy for your own customers/members
- ◆ Ability to firm and shape the power if you intend to use the power for you own customers/members

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